

Historical Lessons for the E-cigarette

November 30, 2019

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The Spanish-American philosopher, George Santayana, is known to have said "Those who cannot remember the past are condemned to repeat it."

Health Canada is currently considering allowing e-cigarette (ECs) producers to advertise ECs as less harmful than cigarette, much like in the UK.[1]

On the other hand, the US Centers for Disease Control and Prevention (CDC) coined the new pulmonary disease that kills and hospitalizes thousands of ECs user as EVALI, an acronym for EC and Vaping Associated Lung Illness.[2]

There are as well contradictory messages from various agencies. Public Health England believe "there is a need to publicize the current best estimate that using EC is around 95% safer than smoking."[3] while CDC claim "E-cigarette, or vaping, products should never be used by youths, young adults, or women who are pregnant." [2]

History can inform us as to what we might expect.

For millennia tobacco was used by Native Americans. Europeans discovered its use when members of the Columbus expedition notice natives smoking cigar like tobacco rolled tobacco leafs. Through trade and improved transportation tobacco eventually became global agricultural product first used as snuff, pipe or cigar smoking. [4]

Cigarettes as we currently know them had to undergo major modifications for it to become the number one cause preventable death and illness in the world today.

Every year cigarette smoking kills 8 million people worldwide.[5] It is estimated by WHO that tobacco will kill 1 billion people this century alone.

The first modification that increased addiction to cigarette smoking was flue

curing, which entail curing tobacco at a hotter quicker temperature, reducing the pH of tobacco smoke from 8 to 6 thus enabling the smoke to be less irritable, more inhalable and deeper thus increasing their addictive nature.[6]

The cigarette has undergone many chemical modifications since.

The latest manipulation of nicotine, the primary addictive agent found in both tobacco and ECs was the introduction of benzoic acid to nicotine liquid rendering the aerosol less bitter and more appealing to initiators resulting in immediate gratification.[7]

Going back to history, the second major invention was the discovery of cigarette making machine by James Bonsack in 1880, thus increasing their production, using what historian Robert Proctor, called the infinite paper.[6]

Prior to the invention of the Bonsack machine, cigarettes were hand rolled by young girls and woman. The Bonsack machine enabled to increase production, coupled with increase advertisement, accessibility, reduction in cost, availability, greater inhalability, and acceptability because during WW1 every American soldier had a pack of cigarette in his sack. All these factors contributed to the rise in cigarette smoking worldwide.

Today many tobacco products contain hundreds of added chemicals including flavors to attract initiator to begin smoking in various part of the world.

What renders ECs special can better understood when compared with the invention of the hypodermic syringe.

Opium according to historian David Courtwright was used for millennia for relief of “anxiety, boredom, chronic fatigue and pain, insomnia, squalling babies in close quarters, and no least, diarrheal disease, ubiquitous and often deadly affliction inherit in concentrated population.” It was initially consumed orally, rectally or in pill form. Smoking opium was an “offshoot of tobacco smoking introduced to China in the 17 century.”[4]

Through migration opium smoking took roots in Europe and the Americas.

Morphine is the active alkaloid agent found in opium first isolated by a German pharmacist by the name of Friedrich Sernturner in 1805 and commercialized by Heinrich Merck founder of Merck pharmaceutical in 1827.

Its use increased upon the discovery of the hypodermic syringe invented by Gabriel Pravas and popularized by Alexander Wood in 1853.

Using the syringe enabled the delivery fast acting morphine and avoided the negative side effect associated with its oral ingestions.

By 1880 morphine use was linked with addiction.

Heroin is derived from morphine by treating it with acetic anhydride to yield diacetylmorphine. It was marketed in 1898, by Bayer pharmaceutical.[4]

So what started as opium, via chemical manipulations has mushroomed over the course of its history into many more addictive drugs, including synthetic opioids and all the harm that followed.

ECs can be viewed as high tech, next generation mass drug delivery systems, much like its predecessors the pill, rolling paper and the syringe, but there are differences as well.

ECs have been found to deliver not only nicotine but many more addictive substances. These include: cannabis, synthetic cannabinoids, methamphetamine, MDMA, synthetic cathinones, cocaine, heroin, fentanyl and derivatives, blue lotus flower e-liquids and resins, tryptamines and ketamine, in any potential combinations of these or with other products available that users may add to the tank and vape.[8, 9]

Add to this thousands of flavoring products, all which can easily be added to the 4th generation of ECs, at variable concentrations and heated to variable temperatures, enabling producers to combine pretty much any substance which they can combine, design, sale and vape.

In other word, ECs are the new high tech generation of a mass drug and substance delivery systems or super designer drug delivery systems which is

resulting in numerous addictions, and which we are only now beginning to understand their harmful consequences.

For some ECs will deliver them from, say, tobacco addiction. Other will become cigarette smokers or dual ECs vapers and smokers. Still, for others, it will result in addictions, EVALI or even death. The probability distribution of those outcomes is constantly changing and will require monitoring.

Nevertheless, just as in the past, it seems to me that we have added to the marketplace a new high tech next generation mass drug delivery systems which, if not properly regulated, will evolve into new addictions, new addicts and increased harm. [10]

Reference

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